

A clinical assessment of the relationship between bone scintigraphy and serum biochemical markers in hemodialysis patients

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Background: Renal osteodystrophy is a metabolic bone disease and a common complication of end-stage chronic renal failure and maintenance dialysis treatment. In this study, we examined the correlation between quantifying bone scintigraphy and serum biochemical markers in hemodialysis patients. **Methods:** Bone scintigraphy with technetium-99m-hydroxy-methylene-diphosphonate (^{99m}Tc -HMDP) was performed on 28 patients on maintenance hemodialysis. Bone scintigraphy was performed using a standard protocol and was quantified by setting regions of interest (ROIs) over selected regions. The bone-to-soft-tissue ratio (B/ST ratio) at each region was calculated in all patients. The B/ST ratios were then compared with serum biochemical markers. **Results:** The B/ST ratio for the skull correlated well with serum bone-specific alkaline phosphatase (BAP) ($r = 0.735$, $p < 0.001$), serum deoxypyridinoline (DPD) ($r = 0.806$, $p < 0.001$) and intact parathyroid hormone (intact PTH) ($r = 0.701$, $p < 0.001$). The B/ST ratio for the lumbar spine correlated with intact PTH ($r = 0.387$, $p < 0.05$) but not with serum BAP or serum DPD. The B/ST ratio for the femoral neck correlated with serum DPD ($r = 0.431$, $p < 0.05$) and intact PTH ($r = 0.449$, $p < 0.05$) but not with serum BAP. **Conclusions:** Our data suggest that quantitative bone scintigraphy is a sensitive and useful method for evaluating bone metabolism in hemodialysis patients. The B/ST ratio for the skull may reflect changes of bone metabolism in hemodialysis patients.

Key words: technetium-99m-hydroxy-methylene-diphosphonate, bone-specific alkaline phosphatase, deoxypyridinoline, bone-to-soft-tissue ratio, renal osteodystrophy